WHAT IS CLAIMED IS:

1. A method for overwriting data in a storage device, wherein data bits are represented by at least one of a presence and an absence of pits formed at a plurality of bit positions on a storage surface, the plurality of bit positions being spaced such that writing a pit at each bit position can cause a previously-written pit within r bit positions to be erased, where r is a predetermined number ≥ 1, the method comprising:

coding data such that successive bits of a value x in a coded bit sequence are separated by at least d bits of value $\bar{x}$, where d is a predetermined number $\geq r$;

reading an amount of an old bit sequence to be overwritten by the coded bit sequence sufficient to locate at least one excess pit, wherein each excess pit is a pit not within r bit positions of a bit position where a coded bit of the value x is to be recorded;

writing, at respective bit positions, each pit required to erase each excess pit in the old bit sequence; and

writing, at respective bit positions, each pit required to maintain a pit at each bit position where the coded bit of the value x is to be recorded.

2. The method as recited in claim 1, further comprising:

reading an amount of the old bit sequence sufficient to identify at least a second excess pit not located in a set of bit positions immediately following a first excess pit and ending with at least one of a first occurrence of a bit position where the coded bit of the value x is to be recorded and a bit position after a last bit position in a series of bit positions in which the coded bit sequence is to be recorded;

defining a write area as a set of bit positions immediately following the second excess pit;

writing a pit at least one of within the first r positions of the write area, and in a last bit position of the write area; and

erasing a first pit not written in the last bit position of the write area with a second pit written in the write area.

3. The method as recited in claim 2, further comprising writing a pit at at least one bit position not in the write area where the coded bit of the value x is to be recorded.

4. The method as recited in claim 2, further comprising:

reading a current bit position if a coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within r bit positions of a bit position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and a write area indicator is unset;

setting the write area indicator for a next bit position if a pit is identified by reading the current bit position; and

unsetting the write area indicator for the next bit position when a pit is written in the last bit position of the write area.

5. The method as recited on claim 4, wherein, when the write area indicator is set, the write area indicator indicates that the current bit position is in the write area.

6. The method as recited in claim 4, wherein r = 1, the method further comprising writing a pit at the current bit position if at least one of the coded bit of the value x is to be recorded at the current bit position, and the write area indicator is set.

7. The method as recited in claim 6, wherein the step of writing the pit at the current bit position occurs for bit positions up to a position after the last bit position in the series of bit positions.

8. The method as recited in claim 6, further comprising reading the current bit position if

the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

9. The method as recited in claim 6, further comprising reading the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not a position after a position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

10. The method as recited in claim 4, wherein r = 2, the method further comprising:

writing, for the current bit position not in the write area, a pit at the current bit position if the coded bit of the value x is to be recorded at the current bit position; and

writing, for the set of bit positions in the write area, a pit at least every two bit positions starting with at least one of a first bit position and a second bit position of the write area and ending with the last bit position of the write area.

11. The method as recited in claim 10, further comprising reading, after a second bit position in the series of bit positions, the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

12. The method as recited in claim 10, further comprising reading, after a second bit position in the series of bit positions, the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within two bit positions following a bit position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

13. The method as recited in claim 1, wherein r = 1.

14. The method as recited in claim 13, wherein d = 1.

15. The method as recited in claim 1, wherein r = 2.

16. The method as recited in claim 15, wherein d = 2.

17. The method as recited in claim 1, wherein x = 1.

18. The method as recited in claim 1, further comprising writing, at respective bit positions, each pit required to erase each pit written at a bit position where the coded bit of the value x is not to be recorded.

19. The method as recited in claim 1, wherein each pit is formed in the storage surface by a probe mechanism of the storage device.

20. An apparatus for controlling overwriting of data in a data storage device wherein data bits are represented by at least one of a presence and an absence of pits formed at a plurality of bit positions on a storage surface, the plurality of bit positions being spaced such that writing a pit at each bit position can cause a previously-written pit within r bit positions to be erased, where r is a predetermined number $\geqslant 1$, the apparatus comprising:

a coder for coding data to be stored in the data storage device such that successive bits of a value x in a coded bit sequence are separated by at least d bits of value $\bar{x}$, where d is a predetermined number $\geqslant r$; and

a controller for controlling reading and writing of the data , wherein:

the controller effects reading of an amount of an old bit sequence to be overwritten by the coded bit sequence sufficient to locate at least one excess pit, wherein each excess pit is a pit not within r bit positions of a bit position where a coded bit of the value x is to be recorded;

the controller effects writing, at respective bit positions, of each pit required to erase each excess pit in the old bit sequence; and

the controller effects writing, at respective bit positions, of each pit required to maintain a pit at each bit position where the coded bit of the value x is to be recorded.

21. The apparatus as recited in claim 20, wherein:

the controller effects reading of an amount of the old bit sequence sufficient to identify at least a second excess pit not located in a set of bit positions immediately following a first excess pit and ending with at least one of a first occurrence of a bit position where the coded bit of the value x is to be recorded and a bit position after a last bit position in a series of bit positions in which the coded bit sequence is to be recorded;

the controller effects defining of a write area as a set of bit positions immediately following the second excess pit;

the controller effects writing of a pits at least one of within the first r positions of the write area, and in a last bit position of the write area; and

the controller effects erasing of a first pit not written in the last bit position of the write area with a second pit written in the write area.

22. The apparatus as recited in claim 21, wherein the controller effects writing of a pit at at least one bit position not in the write area where the coded bit of the value x is to be recorded.

23. The apparatus as recited in claim 21, wherein:

the controller effects reading of a current bit position if a coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within r bit positions of a bit position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and a write area indicator is unset;

the controller sets the write area indicator for a next bit position if a pit is identified by reading the current bit position; and

the controller unsets the write area indicator for the next bit position when a pit is written in the last bit position of the write area.

24. The apparatus as recited in claim 23, wherein, when the write area indicator is set, the write area indicator indicates that the current bit position is in the write area.

25. The apparatus as recited in claim 23, wherein r = 1 and the controller effects writing of a pit at the current bit position if at least one of the coded bit of the value x is to be recorded at the current bit position, and the write area indicator is set.

26. The apparatus as recited in claim 25, wherein the controller effects writing of the pit at the current bit position for bit positions up to a position after the last bit position in the series of bit positions.

27. The apparatus as recited in claim 25, wherein the controller effects reading of the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

28. The apparatus as recited in claim 25, wherein the controller effects reading of the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not a position after a position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

29. The apparatus as recited in claim 23, wherein:

r = 2;

the controller effects writing, for the current bit position not in the write area, of a pit at the current bit position if the coded bit of the value x is to be recorded at the current bit position; and

the controller effects writing, for the set of bit positions in the write area, of a pit at least every two bit positions starting with at least one of a first bit position and a second bit position of the write area and ending with the last bit position of the write area.

30. The apparatus as recited in claim 29, wherein the controller effects reading, after a second bit position in the series of bit positions, of the current bit position if the coded bit

of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

31. The apparatus as recited in claim 29, wherein the controller effects reading, after a second bit position in the series of bit positions, of the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within two bit positions following a bit position at which the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

32. The apparatus as recited in claim 20, further comprising a decoder for decoding a coded bit sequence read from the storage surface, wherein the decoder implements an inverse of a code implemented by the coder.

33. The apparatus as recited in claim 20, wherein the controller effects writing, at respective bit positions, of each pit required to erase each pit written at a bit position where the coded bit of the value x is not to be recorded.

34. The apparatus as recited in claim 20, further comprising a probe mechanism for reading and writing the data.

35. A data storage device, comprising:

a storage surface;

a probe mechanism for reading data from the storage surface, and for recording data on the storage surface by forming pits at a plurality of bit positions on the storage surface, the plurality of bit positions being spaced such that writing a pit at each bit position can cause a previously-written pit within r bit positions to be erased, where r is a predetermined number ≥ 1;

a coder for coding the data to be stored in the data storage device such that successive bits of a value x in a coded bit sequence are separated by at least d bits of value $\bar{x}$, where d is a predetermined number $\geqslant$ r; and

a controller for controlling reading and writing of the data by the probe mechanism, wherein:

the controller effects reading of an amount of an old bit sequence to be overwritten by the coded bit sequence sufficient to locate at least one excess pit, wherein each excess pit is a pit not within r bit positions of a bit position where a coded bit of the value x is to be recorded;

the controller effects writing, at respective bit positions, of each pit required to erase each excess pit in the old bit sequence;

the controller effects writing, at respective bit positions, of each pit required to maintain a pit at each bit position where the coded bit of the value x is to be recorded; and

the controller effects writing, at respective bit positions, of each pit required to erase each pit written at a bit position where the coded bit of the value x is not to be recorded.

36. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for overwriting data in a storage device, wherein data bits are represented by at least one of a presence and an absence of pits formed at a plurality of bit positions on a storage surface, the plurality of bit positions being spaced such that writing a pit at each bit position can cause a previously-written pit within r bit positions to be erased, where r is a predetermined number $\geqslant$1, the method steps comprising:

coding data such that successive bits of a value x in a coded bit sequence are separated by at least d bits of value $\bar{x}$, where d is a predetermined number $\geqslant$ r;

reading an amount of an old bit sequence to be overwritten by the coded bit sequence sufficient to locate at least one excess pit, wherein each excess pit is a pit not within r bit positions of a bit position where a coded bit of the value x is to be recorded;

writing, at respective bit positions, each pit required to erase each excess pit in the old bit sequence; and

writing, at respective bit positions, each pit required to maintain a pit at each bit position where the coded bit of the value x is to be recorded.

37. The program storage device as recited in claim 36, further comprising instructions for performing the steps of:

reading an amount of the old bit sequence sufficient to identify at least a second excess pit not located in a set of bit positions immediately following a first excess pit and ending with at least one of a first occurrence of a bit position where the coded bit of the value x is to be recorded and a bit position after a last bit position in a series of bit positions in which the coded bit sequence is to be recorded;

defining a write area as a set of bit positions immediately following the second excess pit;

writing a pit at least one of within the first r positions of the write area, and in a last bit position of the write area; and

erasing a first pit not written in the last bit position of the write area with a second pit written in the write area.

38. The program storage device as recited in claim 37, further comprising instructions for writing a pit at at least one bit position not in the write area where the coded bit of the value x is to be recorded.

39. The program storage device as recited in claim 37, further comprising instructions for performing the steps of:

reading a current bit position if a coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within r bit positions of a bit position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and a write area indicator is unset;

setting the write area indicator for a next bit position if a pit is identified by reading the current bit position; and

unsetting the write area indicator for the next bit position when a pit is written in the last bit position of the write area.

40. The program storage device as recited on claim 39, wherein, when the write area indicator is set, the write area indicator indicates that the current bit position is in the write area.

41. The program storage device as recited in claim 39, wherein r = 1, and further comprising instructions for writing a pit at the current bit position if at least one of the coded bit of the value x is to be recorded at the current bit position, and the write area indicator is set.

42. The program storage device as recited in claim 41, wherein the step of writing the pit at the current bit position occurs for bit positions up to a position after the last bit position in the series of bit positions.

43. The program storage device as recited in claim 41, further comprising instructions for reading the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

44. The program storage device as recited in claim 41, further comprising instructions for reading the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not a position after a position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

45. The program storage device as recited in claim 39, wherein r = 2, and further comprising instructions for performing the steps of:

writing, for the current bit position not in the write area, a pit at the current bit position if the coded bit of the value x is to be recorded at the current bit position; and

writing, for the set of bit positions in the write area, a pit at least every two bit positions starting with at least one of a first bit position and a second bit position of the write area and ending with the last bit position of the write area.

46. The program storage device as recited in claim 45, further comprising instructions for reading, after a second bit position in the series of bit positions, the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, and the write area indicator is unset.

47. The program storage device as recited in claim 45, further comprising instructions for reading, after a second bit position in the series of bit positions, the current bit position if the coded bit of the value $\bar{x}$ is to be recorded at the current bit position, the current bit position is not within two bit positions following a bit position where the coded bit of the value x is to be recorded, and not within d bit positions of a pit identified by reading a previous bit position, and the write area indicator is unset.

48. The program storage device as recited in claim 36, wherein r = 1.

49. The program storage device as recited in claim 48, wherein d = 1.

50. The program storage device as recited in claim 36, wherein r = 2.

51. The program storage device as recited in claim 50, wherein d = 2.

52. The program storage device as recited in claim 36, wherein x = 1.

53. The program storage device as recited in claim 36, further comprising instructions for writing, at respective bit positions, each pit required to erase each pit written at a bit position where the coded bit of the value x is not to be recorded.

54. The program storage device as recited in claim 36, wherein each pit is formed in the storage surface by a probe mechanism of the storage device.

55. A system for controlling overwriting of data in a data storage device wherein data bits are represented by at least one of a presence and an absence of pits formed at a plurality of bit positions on a storage surface, the plurality of bit positions being spaced such that writing a pit at each bit position can cause a previously-written pit within r bit positions to be erased, where r is a predetermined number ≥ 1, the system comprising:

a coder for coding data to be stored in the data storage device such that successive bits of a value x in a coded bit sequence are separated by at least d bits of value $\bar{x}$, where d is a predetermined number $\geq r$; and

a controller for controlling reading and writing of the data , wherein:

the controller effects reading of an amount of an old bit sequence to be overwritten by the coded bit sequence sufficient to locate at least one excess pit, wherein each excess pit is a pit not within r bit positions of a bit position where a coded bit of the value x is to be recorded;

the controller effects writing, at respective bit positions, of each pit required to erase each excess pit in the old bit sequence;

the controller effects writing, at respective bit positions, of each pit required to maintain a pit at each bit position where the coded bit of the value x is to be recorded; and

the controller effects writing, at respective bit positions, of each pit required to erase each pit written at a bit position where the coded bit of the value x is not to be recorded.